

PLECTOGNATHI.

FAMILY.—TETRODONTIDÆ.

1. DIODON NYCTHEMERUS. Cuv.

Diodon nycthemerus, Cuv. Mém. du Mus. tom. iv. p. 135. pl. 7.

A species of *Diodon* in Mr. Darwin's collection, the number attached to which has been lost, and of which the locality is in consequence unknown, appears referable to the *D. nycthemerus* of Cuvier.

The spines are long, measuring three quarters of an inch in length; round, sharp, and not very close together. There are five in the front row between the eyes, seven in a transverse row between the pectorals, and ten or eleven between the snout and the dorsal in a longitudinal one: none exactly on the upper part of the tail, but one on each side of the base of it, a little below the termination of the dorsal fin, and a corresponding pair still lower down. The spines on the belly are shorter, and rather closer together than those on the back. One of those on the back in this specimen is accidentally forked.

The true teeth appear on the surface of the jaws like minute scales, as in several species of the genus *Searus*.

The fin-ray formula is as follows:

D. 13; A. 13; C. 9; P. 20.

Length 5 inches 6 lines.

The colours, so far as can be judged, the specimen being in spirits and not in very good condition, answer to Cuvier's description of them with tolerable exactness.

2. DIODON RIVULATUS. Cuv.

Diodon rivulatus, Cuv. Mém. du Mus. tom. iv. p. 129. pl. 6.

An individual apparently of this species was picked up by Mr. Darwin on the shore of the Rio Plata at Maldonado. It agrees with Cuvier's description, excepting that the undulating lines are not visible, probably owing to the state of the specimen when found.

The spines are short, barely a quarter of an inch in length, but very strong, compressed, and resembling canine teeth. There are three in the first row between the eyes; about six in a transverse row across the back, and seven or eight in a longitudinal one. Beneath they are shorter and more numerous. The orbits are elevated in ridges, and project forwards over the eyes. Two very small barbules attached to the lower lip. Surface of the jaws smooth, the teeth not appearing as scales.

D. 11; A. 10; C. 8; P. 22.

Length 5 inc. 3 lin.

As Cuvier observes, the *D. geometricus* of Bl. and Schneid.* approaches very closely this species, and I can hardly think it to be distinct. Yet neither in Mr. Darwin's specimen, which in all other respects agrees exactly with Schneider's figure, do I discern any appearance of the hexagonal meshes on the surface of the body.

3. DIODON ANTENNATUS. Cuv.?

Diodon antennatus, Cuv. Mém. du Mus. tom. iv. p. 131. pl. 7.

A third species of *Diodon*, brought home by Mr. Darwin, and taken by him at Bahia, in Brazil, is either the young of the *D. antennatus* of Cuvier, or else new; but the only individual in the collection is quite small, and not more than an inch in length, excluding caudal. The fleshy filaments above the eyes, which, according to Cuvier, so peculiarly distinguish the *D. antennatus*, are very distinct,—but I see none on the sides. The ground colour would seem darker than he describes, so as to render the spots and markings on the upper parts not distinguishable from it now, if they ever existed. In spirits it appears of a nearly uniform deep brown red. The spines, or rather papillæ, are also shorter than represented in his figure; but this may be only the effect of immaturity.

According to Mr. Darwin, the colours when recent were as follows:—"Above blackish brown, beneath spotted with yellow. Eye with the pupil dark blue; iris yellow, mottled with black." It is added:—"On the head four soft projections; the upper ones longer, like the feelers of a snail."

Mr. Darwin observes, "that the dorsal, caudal, and anal fins, in this species, are so close together that they act as one: these, as well as the pectorals, are in a continued tremulous motion even when the fish is otherwise motionless. The animal propels its body by using the posterior fins in the same manner as a boat is sculled, that is, by moving them rapidly from side to side with an oblique surface exposed to the water. The pectoral fins have great play, which is necessary to enable the animal to swim with its back downwards."

Mr. Darwin made some further observations on the habits of this species, which have already appeared in his "Journal," to which I may refer the reader.† The tendency of them is to explain the process by which the water and air are absorbed, when the *Diodon* distends itself into a spherical form; and to show that the fish *can* swim, when floating in this state with its back downwards, which Cuvier doubted. He thinks that the water is taken in partly for the sake of regulating its specific gravity. He also notices a curious circumstance with respect to this species, viz., "that it emitted from the skin of its belly, when handled, a most beautiful carmine red and fibrous secretion, which permanently stained ivory and paper."

* Syst. Ichth. pl. 96.

† pp. 13, 14.